Mechanical Processes AND Functional Claims

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Mechanical Processes and Functional Claims

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There are few, if any, classes of claims more difficult to deal with than those coming under the above headings, and perhaps none in which the decisions seem more at variance. This lack of apparent uniformity is, of course, largely due to the fact that no two cases present precisely the same state of facts. From this arises the practical difficulty that the citation of a number of decisions by the Examiner is usually met, on the part of the attorney, by an even more formidable list. Decisions are thus chiefly useful in enabling the Examiner to make up his own mind; they are rarely effective in convincing the attorney of the error of his ways; and even where the Examiner is sustained on appeal, the reasons and decisions relied on by the appellate tribunal are frequently quite different from those cited by him in the primary consideration of the case.

It will be of some assistance to the young Examiner if he will bear in mind the order of importance of the various tribunals whose published decisions are supposed to guide him in his work. This order, which is not the same in the Office as in outside legal practice, is believed to be as follows: 1st, the Commissioner then in Office; 2d, the Supreme Court of the United States; 3rd, the Court of Appeals of the District of Columbia, and 4th, the various Circuit Courts of Appeal. The decisions of the Commissioner are placed first in the order of importance because he is the responsible head of the Office and all patents are issued in his name. It is to be presumed

that his decisions are made with a due regard for those of the courts and he is entitled to have his interpretation of the law followed by the Office force. The District Court of Appeals is given preference over the Circuit Courts because it has the final voice in most matters arising within the Office and it would be obviously improper and incongruous to do otherwise than follow such courses of procedure as it may indicate. No attempt will be made in this paper to give an exhaustive list of decisions bearing upon the subjects under consideration. The few cited are mainly those which are believed to be in harmony with the present Office practice.

There never seems to have been any doubt but that inventions which related to the production of a definite product, and imvolved chemical or other elemental action were proper subjects for process claims. In the case of articles which involved merely a change in form of the material acted upon, however, the question was long in doubt. In 1895 the Supreme Court in Risdon Iron Works *vs.* Medart, 71 O. G., page 751, said "Processes of manufacture which involve chemical or other similar elemental action are patentable, though mechanism may be necessary in the application or carrying out of such processes, while those which consist solely in the operation of a machine are not."

The Supreme Court was still in doubt on this subject in 1898, see Boyden *vs.* Westinghouse, 83 O. G., page 1067, wherein the following statement is made: "Risdon *vs.* Medart, and other cases, assume, although they do not expressly decide, that a process to be patentable must involve a chemical or other similar elemental action, and it may still be regarded as an open question whether the patentability of processes extends beyond this class of inventions."

It should be noted that four justices dissented from this opinion. These statements of the Supreme Court were quite generally taken as precluding process claims in the absence of elemental action. Not all of the courts, however, adopted this construction, and in 1901 the Court of Appeals of the District of Columbia in In re Weston, 94 O. G., page 1786, expressed the opinion that processes involving simply mechanical changes in the

material acted upon might be patentable if the processes could be performed by hand or by mechanism other than that shown or preferred. For the sake of comparison with later cases, Weston's claim 1, which was allowed by the court, is here quoted:

> "1. The described method of manufacturing a symmetrical coil for an electrical measuring instrument, consisting in first forming a supporting frame or spool by subjecting a short tube of metal to pressure until the desired conformation and shape is obtained, then winding the coil thereon and finally securing the pivot pins in the axial line of the coil."

In 1909 the Supreme Court set its seal of approval upon this type of claim in the Expanded Metal Case, 143 O. G., page 863, wherein it held valid a process claim for making metal lathing from sheet metal. The process in this instance could be carried out by hand although for profitable commercial purposes a specially designed machine was required.

It will be noted that in the foregoing instances and in fact in the large majority of cases which have been passed on by the courts, the process produces a definite, tangible article. In certain divisions of the Office, however, cases of alleged mechanical processes are constantly being filed which relate merely to the production of power and perhaps also its application to a driven shaft. These cases have a certain likeness to those of the most approved process type in that they involve an "elemental" action consisting in changes in temperature, pressure, degree of moisture and sometimes in the chemical composition of an expansible fluid. There is, however, no tangible product produced and the element subject to change usually passes through a definite cycle or cycles, at the end of which it is either restored to its original condition or is exhausted as a waste product of some description, usually a gas.

While not strictly analogous, the following claim declared valid by the Circuit Court may be of value:

> "The herein described method of changing the speed of an electric motor which consists in main-

taining upon each one of three or more conductors a potential difference from that on any other one of the conductors and connecting the armature terminals of the motor with different pairs of said conductors."

See Bullock Electric Mfg. Co. *vs.* Crocker Wheeler Co., Federal Reporter, Vol. 141, page 101.

In the absence of authoritative decisions upon this class of cases, those Examiners who have frequently to deal with such processes may be interested in the following claims which have been recently passes upon by the Examiners-in-Chief.

The first application discloses a steam turbine and a hot water heating system. Steam is withdrawn from an intermediate stage of the turbine and used to heat the water in the system. The amount of steam so used is regulated by varying the speed at which the water is pumped through the heater.

The claim which was held on appeal to be a proper process claim is as follows:

"The herein described process of variably regulating development of power and heat in a combined power and heating system, which comprises expanding a heated expansible working fluid in a suitable motor, withdrawing a portion of such working fluid from an intermediate expansion point of the motor, and exchanging heat between the working fluid so withdrawn and another fluid to be heated, and variably regulating the rate of absorption of heat by such second fluid with respect to the rate of supply of working fluid to said motor, and thereby variably regulating the proportion of the initial heat energy of such working fluid converted into power to the heat energy imparted to said heating fluid."

In the second application a boiler supplies high pressure steam to a water injector and the combined mass of steam and water is delivered against the blades of a

turbine rotor. All of the steam is then condensed and pumped back into the boiler.

The following claim was held on appeal to be a proper process but was not allowed on account of references:

> "The method of operating automobile power plants employing low speed steam or gas turbines, which consists in generating an expansive fluid at high pressure, converting the energy thereof into kinetic energy in a fluid of higher density, thereby imparting a low velocity to the denser fluid, delivering the last named fluid to a rotary part of a suitable turbine, and condensing and returning in the system such of the fluid as has become evaporated."

The third application discloses a turbine consisting of a number of thin, closely spaced discs, transversely mounted on a shaft and enclosed in a casing. A nozzle in the casing admits steam against the edges of these discs and tangential to their peripheries. The steam winds around in a spiral path between the discs, causing them to revolve by its adhesive action and is finally exhausted through openings in the discs near the center.

The original application disclosed both apparatus and method claims, but the method claims were later canceled and presented in a divisional case in order to secure a speedy allowance of the parent application, which application became a patent shortly thereafter. It should be noted that division was not required by the Examiner.

The claim presented in this case is as follows:

> "The method of deriving energy from a fluid under pressure which consists in causing it to flow through unobstructed passages in a runner rotatably mounted in a closed casing so that it is free to follow natural spiral paths from peripheral ports of inlet to central ports of outlet, and thereby propelling the runner by the adhesive and viscous action of the fluid upon the plane surfaces of the passages therein."

The Examiners-in-Chief sustained the rejection of this claim, stating that in spite of its being nominally a process claim it was in reality an apparatus claim, and would have precisely the same scope if written in the following form:

> "A machine for deriving energy from a fluid under pressure through the adhesive and viscous action thereof upon plane surfaces which comprises a runner rotatably mounted in a closed casing, a peripheral port of inlet, a central port of outlet, and an unobstructed passage through the runner such that the fluid is free to follow natural spiral paths in its passage through the machine."

The appellate tribunal further held that such a claim as the foregoing could have been presented in the original application or in a reissue thereof, and that to allow the claim or a substantial equivalent thereof in another case would result in extending the monopoly conferred by the first patent. They called attention to such decisions as Century *vs.* Westinghouse, 191 F. R., page 350; Thomson *vs.* Hoosic, 80 O. G., page 967, and Miller *vs.* Eagle, 66 O. G., page 845. The purport of these decisions is that while a patent for a process may issue after the grant of one for the apparatus, a second patent which merely covers the same invention in somewhat broader terms is ordinarily invalid.

The case just considered sets forth a unitary structure through which the steam passes steadily in a path absolutely determined by the construction of the engine and which no change in size or proportions would affect except in degree. It would seem, therefore, that the action of the steam is just as much a function of the machine as is the action of a train of gears in a clock mechanism.

The first two applications set forth groups of devices which might be combined in various ways and in which differences in proportion or in manipulation of the various parts will produce widely different results.

In the first case all of the apparatus assembled in the same relation was shown in a single reference, yet the claim was held to be for a valid process because a certain

pump was manipulated in a way not contemplated by the patentee.

While in no sense conclusive, the following considerations may be found useful in dealing with alleged process claims involving the production of power by the use of an expansible fluid, and possibly in certain other cases where no tangible product is produced.

First: A process is not anticipated by an apparatus which might be used to carry out the process but was not, in fact, intended to do so.

Second: There is probably no patentable process in a single machine using an expansible fluid, where the cycle of change in the fluid is uniform and definitely fixed by the construction of the machine.

Third: There is a presumption of a patentable process in the arrangement of a group of devices to produce a novel result, particularly where matters of proportion and relative position are important. This presumption is considerably strengthened if the process necessitates the manipulation of one or more of the devices involved.

If applications of the kind under consideration are not patentable, it is usually because the alleged process is in reality merely the function of the machine, and this leads naturally to the consideration of functional claims.

It is so well recognized that direct claims for a function are not patentable that such claims are never presented except by an occasioual applicant who is quite unfamiliar with patent practice.

The greatest difficulties arise in connection with claims containing one or more clauses beginning with "means," "mechanism," or some similar expression, and followed by a statement of the function performed thereby. There has been considerable variation in the liberality with which such claims have been regarded.

The Supreme Court has several times set its seal of approval on claims involving sets of mechanism defined by the result produced, see, for instance, Morley *vs.* Lancaster, 47 O. G., page 267, in which the following claim was held valid:

> "The combination, in a machine for sewing shank-buttons to fabrics, of button feeding mech-

> anism, appliances for passing a thread through the eye of the buttons and locking the loop to the fabric, and feeding mechanism, substantially as set forth."

The ideas expressed by the court in these decisions were elaborated and possibly carried further than the court intended in a series of Commissioner's decisions extending over the next ten years; see, for instance, Ex parte Pacholder, 51 O. G., page 295; Ex parte Halfpenny, 73 O. G., page 1135, and Ex parte Knudsen, 72 O. G., page 589.

This last decision has become almost a classic and for years no examination for promotion was considered complete in which it was not involved. It divides functional claims into four classes, of which only the third is of interest here.

This class defines the construction as "means," "mechanism" or "devices" for effecting certain results or it defines certain named elements by statements of function instead of structure. The decision further states:

> "The use of the above noted phraseology does not of necessity render a claim objectionable, for where the idea is clearly stated and the combination or relation of parts to produce a desired end is plainly expressed, the breadth of statement of the claim is no reason for objecting to it. . . . When indefinite, such claims should be objected to; but they can only be rejected on references when these disclose both the complete combination and the functional qualifications covered by the claim."

The result of this decision and others of like nature, was that the attorneys, and to some extent the examiners, came to consider that a claim was patentable over the art if it contained a clause prefaced by the word "means" followed by a statement of a novel function. There was a gradual reaction from this extreme view, the present practice being more nearly that indicated by the District Court of Appeals in In re Gardner, 140 O. G., page 258.

In this decision the court ruled adversely on the following claim:

> "In a vapor register, in combination with a suitably inscribed dial, a device for automatically indicating thereon simultaneous pressures and heat characteristics for superheated vapor."

In spite of the use of the word "device" this claim was held to be substantially a claim for a function since it apparently covered all means by which the function could be carried out. The court also called attention to the Supreme Court decision of O'Reilly *vs.* Morse, 15 Howard, page 62, the bearing of which on this class of cases had been largely lost sight of. In this case, although the court held that Morse was the first to convey intelligence by electricity, it denied him a claim covering broadly "means" for so conveying intelligence while allowing him a claim for "electro magnetic means" for the purpose.

It is not believed that there is any conflict between the decisions just considered and those of the Supreme Court which sustain certain claims for sets of mechanism. A claim for "means" for performing a particular function is certainly indistinguishable in scope from a claim for the function itself; while a claim involving sets of mechanism, even though each clause be for "means, etc.," is not a claim for a result but rather for a series of steps for obtaining it, and the field is still left open for others who attain the same end by the use of more or fewer or different elements.

The essence of the Gardner decision would appear to be that an inventor is not entitled to a claim in which the whole novelty consists in a single statement of function, even if the clause is headed by the word "means" or some similar expression. There must be some hint as to the nature of the means, some suggestion of structure which will aid other inventors or the courts in applying the doctrine of equivalents.

Claims of this type are sometimes rejected as being "broader than the invention." The fundamental difficulty appears to arise from the fact that the patent law makes no provision for the patenting of a function or result, but only of the means whereby it is accomplished.

Furthermore, an inventor is only entitled to protect the means which he actually discloses for the purpose *and substantial equivalents thereof*. He should not, therefore, be allowed a claim which appears to cover *all* means whereby the result may be accomplished, since to do so gives the public the impression that the whole field of invention in that particular line is closed, and also imposes an unnecessary burden on the courts by forcing them to read into the claim limitations which are not apparent on its face.

It would certainly be to the advantage of inventors of machines, and would perhaps result in more even justice, if our laws, like those of Germany, permitted functional claims. A discoverer of a new function often makes quite as valuable an invention as the discoverer of a new process, and it would seem as though he was entitled to equally broad protection.

At present he must steer between the Scylla of a process claim, which the Examiner will probably reject as being for the function of the machine, and the Charybdis of an apparatus claim which, if as broad as the other, is likely to be opposed by such decisions as Gardner and O'Reilly *vs.* Morse.

The Supreme Court in Steinmetz *vs.* Allen, 109 O. G., page 549, called attention to the fact that process and apparatus may approach each other so nearly that it would be difficult to distinguish the process from the function of the machine and indicated that in such cases of close relationship both kinds of claims might be joined in a single application, although the court did not go so far as to state that either set would be invalidated if applicant elected to patent them separately.

In doubtful cases of this kind it is probably best to allow the applicant both process and apparatus claims, providing they are presented in a single case. It would be manifestly improper to hold that the alleged method set forth merely the function of the machine and at the same time to require division, for the mere presence of the doubt is sufficient to show that but one invention is involved and that the sole question at issue is the manner in which it shall be expressed. If the applicant takes out a patent containing simply apparatus claims,

there is considerable danger that he will not secure the measure of protection to which he is entitled, while if it contains only process claims he is liable to have the court invalidate them as being functional. If the two sets of claims are presented in separate patents, there is danger that one patent or the other will be invalidated as unlawfully extending the monopoly unless both patents issue on the same date. It would appear proper in copending applications of this kind for the Office to require a consolidation of the claims in a single case and, in the event of a failure to comply, to reject one of them on the other as soon as that other was passed to allowance.

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